## DESCRIPTION

Equipment and method for manufacturing a soot preform
~~Porous glass base material production device and method~~

Technical Field

5      The present invention relates to equipment and a manufacturing method for manufacturing a soot preform for an optical fiber, photomask or the like.

Background Art

10      For manufacturing a soot preform there are widely used methods, such as the VAD method and the OVD method. According to these methods, the gas of raw materials such as silicon tetrachloride and germanium tetrachloride is supplied to a burner together with a combustion gas and the like, and glass particulates that are formed by hydrolysis reaction therefrom are deposited on

15     the tip of or around a starting rod. The soot preform thus produced is dehydrated and sintered, resulting in a transparent vitrified preform. The transparent glass preform is melted by heating, and drawn to form an optical fiber.

      Figure 4 is a sectional view illustrating the main part of equipment in

20    which a soot preform is produced. The numeral 1 shows a reaction vessel, 2 a burner, 2a flame, 3 an air inlet, 4 an exhaust port, 5 a starting rod, 6 a soot preform, and 7 the flow of an air current.

      Gases, such as a raw material gas comprising silicon tetrachloride,

consequently wereunlikely to cause any special problem. Also, when the number of the voids having a diameter equal to or more than 1 mm that existed in the preforms was examined about 10 pieces of the above preforms that were in a state transparently vitrified by dehydration and sintering, the existence of

5    0.9 voids per preform was confirmed.

(Comparative example)

After manufacturing 10 pieces of preforms 6 in the same manner as in Example 1 except that the partition board 8 was not provided, the inside of the reaction vessel was examined. The quantity of the floating glass particulates

10   that adhered to the inner wall surface in the space above the partition board 8 of the reaction vessel was considerably large. Also, when the number of the voids having a diameter equal to or more than 1 mm that existed in the preforms was examined about 10 pieces of the above preforms that were in a state transparently vitrified by dehydration and sintering, the existence of 5

15   voids per preform was confirmed. The number of voids is considerably larger as compared with Examples 1, 2, and 3. It is considered to be due to the numerous floating glass particulates that adhered to the soot preform.

The applicability in the industry

20   The soot preform manufacturing equipment of the present invention is constituted such that a partition board is provided in part of the space around a soot preform in a reaction vessel so that the space is separated into the upper and lower parts. An exhaust port is provided below the partition board in the

## ABSTRACT

An object of the present invention is to reduce the adhesion of floating glass particulates to the surface of a soot preform during the manufacture of the soot preform, thereby reducing the voids generated in the transparent glass

5    preform made from the soot preform, and to improve the quality of the optical fiber manufactured from the transparent glass preform. The equipment of the invention is equipped with a reaction vessel 1, a burner 2 provided within the reaction vessel 1 into which raw material gas and combustion gas are supplied so as to generate glass particulates by hydrolysis reaction, and a starting rod 5

10   onto which the glass particulates generated by the burner 2 are deposited. By drawing up the starting rod 5 while turning it around its axis, the glass particulates are deposited on the tip of or around the starting rod 5 to form a soot preform 6 in column-like shape. The equipment is provided with a partition board 8 that separates part of the space around the soot preform 6 in

15   the reaction vessel 1 into upper and lower parts. An exhaust port 4 is provided below the partition board 8 in the inner wall of the reaction vessel 1, and the burner 2 is installed in the space below the partition board 8.